





## 2010 Annual Report







Celebrating 50 Years of Leadership

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### **OUR MISSION**

Through innovations in energy and environmental policies, programs, and technologies, the Southern States Energy Board enhances economic development and the quality of life in the South.

Cover Photos (Starting at the top):

(L to R) President Dwight D. Eisenhower and Governor LeRoy Collins, FL; President Lyndon B. Johnson signs S. 3075, Private Ownership of Special Nuclear Materials Act of 1964; Governor Bill Clinton, AR, meets the press at SSEB Annual Meeting, Wilmington, Delaware, 1989; Governor Joe Manchin III, WV, current SSEB Chairman.



Above (L to R): Press Interview, 1979 - SINB Federal Rep. W. Sterling Cole; Rep. Pete B. Turnham, AL, SINB Chairman; Governor Pedro G. Zorrilla Martinez, Nuevo Leon, Mexico; Zorrilla; Kenneth Nemeth, SINB Executive Director.

Below: SECARB Partners host an American Association of Petroleum Geologists field trip in April 2010 at the site of the SECARB Phase III Early Test in Cranfield, MS.





Above: 1968 - Technician, standing behind thick shielding, performs delicate mixing of radioactive materials with the aid of mechanical hands.

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#### SOUTHERN STATES ENERGY BOARD STAFF

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SSEB Technical Manager, Bioenergy Program

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Senior Technical Advisor

#### Mark A. Shilling

Special Counsel







Above: Governor Sonny Perdue, GA, SSEB 2008-2009 Chairman, congratulates Governor Joe Manchin, WV, on his role as incoming Chair at the 2009 SSEB Annual Meeting.

Left: Governor Joe Manchin III addresses SECARB Stakeholders, March 2010.



### Message from the Chairman



As the Southern States Energy Board celebrates its golden anniversary, it is my pleasure to serve as Chairman of this exemplary organization. Its mission, "to enhance economic development and the quality of life in the South, through innovations in energy and environmental programs, policies and technologies," may perhaps carry greater responsibility than it did when the Southern Interstate Nuclear Board (SINB), SSEB's predecessor, was created back in 1960.

In fact, not since the 1970's have we seen so much discussion about the role of energy and how it is produced and used. This year, concerns about global warming and greenhouse gases, rising fossil energy costs, nuclear waste, summer blackouts and instability in energy rich regions of the world have consumed policy discussions, and rightly so. Training is needed for energy jobs in fields ranging from mining to carbon sequestration, nuclear power plant construction to biofuel development. Disagreements over the speed and cause of climate change are pervasive, as are discussions about the ownership of rare earths, which are crucial to much green energy technology. Of late, the economic and environmental results of the Deepwater Horizon oil spill has spawned intense energy and environmental policy debate across

the country and the world. Leadership and dialogue throughout the industry and at the national and state level are needed now more than ever.

It is at times like these, especially, that I value the role that the Southern States Energy Board plays as the cohesive voice for our 18 states and territories. In 1960, southern leaders had the foresight to recognize that with the rise of nuclear energy, their states would need to address issues that did not adhere to state boundaries and now, fifty years later, that scope of vision has not changed. This spring, SSEB was asked to participate in the development of the energy innovation hub known as the Consortium for Advanced Simulation of Light Water Reactors (CASL), headquartered at Oak Ridge, Tennessee. This project will prove instrumental in the development of



Above (L to R): John Litynski, NETL; Brian Dressel, NETL; Bruce Smith, Denbury Resources, Inc.; Gerald Hill, SSEB; Governor Joe Manchin III, WV, at the 2010 SECARB <u>Stakeholde</u>rs Briefing.

Below (L to R): Governor Joe Manchin, WV, discusses state energy strategy with Governor Luis G. Fortuño, PR.



the next generation of nuclear reactors. That this new partnership has been created exactly half a century after the creation of SINB, is not just a coincidence. It speaks to the relevancy of SSEB over years past and for those to come.

Coal is a fundamental component of our nation's energy resource base as well. Our long term energy security and economic competitiveness are enhanced through reliance on domestic, affordable energy supplies. SSEB is committed to advancing technologies that will enable our industries, businesses and electric users to continue to rely on coal now and into the future.

As it happens, ongoing assessments and analysis of American energy security, state and federal legislation, and technological solutions to current energy demands and greenhouse gas emissions comprise much of the work undertaken by the 2009-2010 Board. Vocal and well informed questioning of cap and trade bills, along with alerts to the numerous rules and regulations promulgated by the U.S. Environmental Protection Agency exhibit the national and world perspective of our organization.

That is not to say, however, that those issues specific to our region are forgotten or ignored by SSEB. Quite the contrary. SSEB continues to research and promote resources and solutions particular to the South.

The Southeast Regional Carbon Sequestration Partnership (SECARB), is one such project. SECARB continues to characterize the region's geologic storage options, assess the wide-scale construction of pipelines to transport CO2 for sequestration, enhanced oil recovery and commercial uses and monitor federal and state regulatory and legislative activities. This year SECARB is pressing forward with Phase III of the plan, which is developing an integrated CO2 capture, transportation and geologic storage project using post-combustion CO2 captured from a coal-fired power generating facility.

In addition, the National Energy Technology Laboratory (NETL) has partnered with SSEB and others to develop SECARB-Ed, a Carbon Capture and Storage (CCS) regional training program to help build the workforce necessary for the growing CCS field.

The SECARB and SECARB-Ed programs are an excellent example of the Board's ability to leverage opportunities to assist its member states. SECARB received initial funding from the U.S. Department of Energy (DOE) but more than 39 percent of current project funding is from industry partners. Such partnerships are common in terms of both dollars and scientific contributions, allowing the Board to increase its program and financial commitments to the benefit of the entire region.

I encourage you to read more about the Board's accomplishments in this year's Annual Report. There you will find that the dedication of our members and their tireless drive to engage in dialogue across industry, the region and the nation is not just about honoring the past of this fine organization, but is a beacon for the future of our country.

Joe Manchin III Governor of West Virginia Chairman, SSEB, 2009-2010



Above (L to R): Mark Shilling, SSEB and Governor Jay Nixon, MO, at 2009 SSEB Annual Meeting.

Right (L to R): Tim Kichline, Edison Electric Institute; Sen. Robert Adley, LA; Sen. Denny Altes, AR; Rep. Clay Ford, FL; Rep. Randy Davis, AL; Rep. Warren Chisum, TX and George Bullock, ACCCE, at the 2009 SSEB Energy and Environment Legislative Briefing.





Above: Governor Bob Riley, AL, at the SSEB 2009 Annual Meeting.



### **BOARD MEMBERS**



#### **EXECUTIVE COMMITTEE**

Chairman: Governor Joe Manchin III, West Virginia
Vice Chairman: Representative Rocky Adkins, Kentucky\*
Treasurer: Representative Myra Crownover, Texas
Governor Sonny Perdue, Georgia
Governor Bob Riley, Alabama
Senator Robert Adley, Louisiana
Senator Thomas McLain Middleton, Maryland
Representative Harry Geisinger, Georgia
Representative Jim Ellington, Mississippi
Federal Representative: Ms. Linda Key Breathitt
Secretary: Mr. Kenneth J. Nemeth, Executive Director SSEB\*\*

\*Chair, SLC Energy & Environment Committee / \*\*Ex-Officio, Non-Voting Executive

#### **ALABAMA**

Governor Robert Riley Senator Jimmy W. Holley Representative William E. Thigpen, Sr. Representative Pete Turnham, Emeritus, House Alternate Representative Randy Davis, Governor's Alternate

#### **ARKANSAS**

Governor Mike Beebe Senator Steve Faris Senator Denny Altes, Senate Alternate Representative Allen Maxwell Mr. Marc Harrison, Governor's Alternate

#### **FLORIDA**

Governor Charlie Crist Senator Lee Constantine Representative Clay Ford Mr. Robert Vickers, Governor's Alternate

#### **G**EORGIA

Governor Sonny Perdue Senator David Shafer Senator Mitch Seabaugh, Senate Alternate Representative Harry Geisinger Representative Lynn Smith, House Alternate

#### KENTUCKY

Governor Steve Beshear Senator Brandon Smith Representative Rocky Adkins Dr. Leonard K. Peters, Governor's Alternate



Above: The Honorable Linda Breathitt, SSEB Federal Representative, at the 2010 SECARB Stakeholders Briefing.

Below (L to R): Sen. Mark Norris, TN, and Rep. Weldon Watson, OK, at the 2009 SSEB Energy and Environment Legislative Briefing.





Above: Governor Haley Barbour, MS, at the 2009 SSEB Annual Meeting.

#### Louisiana

Governor Bobby Jindal Senator Robert Adley Representative Joe Harrison Representative Noble Ellington, House Alternate

Mr. William "Bill" Dore, Governor's Alternate

#### **MARYLAND**

Governor Martin O'Malley Senator Thomas McLain (Mac) Middleton Delegate Dereck E. Davis Mr. Malcolm D. Woolf, Governor's Alternate

#### **MISSISSIPPI**

Governor Haley Barbour Senator Nolan Mettetal Representative Jim Ellington Mr. Patrick Sullivan, Governor's Alternate

#### **Missouri**

Governor Jay Nixon Senator Kevin Engler Representative Ed Emery

#### **NORTH CAROLINA**

Governor Bev Perdue Senator David W. Hoyle Speaker Joe Hackney Ms. Jennifer Bumgarner, Governor's Alternate

#### **OKLAHOMA**

Governor Brad Henry Senator David F. Myers Representative Weldon Watson Mr. J.D. Strong, Governor's Alternate

#### PUERTO RICO

Governor Luis G. Fortuño Mr. Jose Rafael Diaz, House Legislative Counsel Mr. Luis Bernal, Governor's Alternate

#### South Carolina

Governor Mark Sanford Senator Lawrence Grooms Representative William E. "Bill" Sandifer Ms. Ashlie Lancaster, Governor's Alternate

#### **Tennessee**

Governor Phil Bredesen Senator Mark Norris Representative Gary Odom Mr. Ryan Gooch, Governor's Alternate

#### **TEXAS**

Governor Rick Perry Representative Myra Crownover Commissioner Michael L. Williams, Governor's Alternate

#### VIRGIN ISLANDS

Governor John P. deJongh Mr. Bevan R. Smith, Jr., Governor's Alternate

#### Virginia

Governor Robert F. McDonnell Senator John C. Watkins Delegate Harry R. Purkey Dr. Michael Karmis, Governor's Alternate

#### WEST VIRGINIA

Governor Joe Manchin III Senator Earl Ray Tomblin Senator Mike Green, Senate Alternate Delegate Linda Goode Phillips Mr. John F. Herholdt, Governor's Alternate







Above: Rep. Rocky Adkins, KY, moderates the 2010 SSEB Energy and Environment Legislative Briefing.

Above: Kathryn Baskin, SSEB, and Speaker Joe Hackney, NC, at the 2009 SSEB Energy and Environment Legislative Briefing.





Above: Rep. Randy Davis, AL, at the 2009 SSEB Energy and Environment Legislative Briefing.



### **Programs**



The Southern States Energy Board operates and oversees a wide variety of energy and environment programs. Areas from water use to carbon sequestration, biomass to nuclear waste transportation, legislative and regulatory action to energy independence and security fall under the purview of SSEB.

#### ENERGY AND ENVIRONMENT LEGISLATIVE PRIORITIES AND ANALYSIS

The Energy and Environmental Legislative Priorities and Analysis Program tracks the progress of state and federal legislation and regulations related to a wide range of energy and environmental issues.

Every year the Board's staff collects and summarizes legislation in all of the member states to produce the Energy and Environment Legislative Digest. A compendium of energy and environmental legislation, it thoroughly examines measures passed in the SSEB member states. Some exemplary bills from this year's legislative session include the following:

Florida's House Bill 7179 allows a property owner to apply to the local government for funding to finance a qualifying energy improvement. Louisiana's House Bill 495 provides that the owner of the land or

water bottom is the owner of any monetary compensation derived from carbon sequestration. Oklahoma's House Bill 3028 creates the Oklahoma Energy Security Act, which establishes a voluntary goal of increasing the installed capacity of electricity derived from renewable energy sources to 15 percent by the year 2015. Puerto Rico's Senate Bill 1519 defines Puerto Rico's public policy regarding the use of renewable energy in order to diversify power generation and creates a Renewable Portfolio Standard. West Virginia's Senate Bill 350 amends the alternative and renewable energy portfolio standard by recategorizing recycled energy as a renewable energy resource in order to purchase energy resource credits and by allowing ethanol to be considered a renewable energy resource when produced from sources other than corn.

In addition to state bills, there were several federal energy and environmental bills introduced in Congress in 2010. The most



Above: Participants of the 2010 SSEB Energy And Environment Briefing to Southern Legislators in Charleston, SC.

Below: 1968 - Finishing touches are applied to the core barrel of a nuclear power reactor of the type built by Westinghouse Electric at Pensacola, FL.



comprehensive of these was The American Power Act, introduced by Sen. John Kerry (D-MA) and Sen. Joseph Lieberman (I-CT). The Act addresses topics ranging from inflated energy costs, to harnessing domestic power supplies, investing in clean energy technologies, reducing emissions and creating a carbon market. In addition, Sen. Dick Lugar (R-IN) introduced his Practical Energy and Climate Plan bill which prioritizes targeted policies that promise to bring monetary and energy savings while providing flexible frameworks to encourage investment in a secure energy future.

Other elements of the program include comparative studies on state Carbon Capture and Sequestration (CCS) and Renewable Portfolio Standards (RPS) legislation. The study on CCS analyzed bills in 22 states and compared aspects dealing with project authority, pore space and carbon dioxide (CO<sub>2</sub>) ownership, long and short term liability and financing sources. Similarly, the RPS study compared RPS standards, eligible technologies, applicable sectors, technology minimums and credit trading in 29 states and the District of Columbia. The Board provided testimony before the Oklahoma Clean Energy Commission on these issues.

SSEB also tracks developments in federal regulatory activities related to energy and the environment. These included the Environmental Protection Agency's (EPA's) rules for National Standards for Fuel Economy and Greenhouse Gas (GHG) Emission Levels for Passenger Cars and

Light Trucks, or the "Tailpipe Standards," the GHG Tailoring Rule and four proposed rules that would expand the EPA's mandatory GHG reporting rule.

This year, SSEB has initiated "Action Alert" emails to notify our members when significant movement has occurred in federal legislation or rules relevant to SSEB's purview. An Action Alert summarizes pending legislation or rules, provides helpful links and alerts our members to how it may affect their states. These emails, coupled with the Digest and other legislative analyses provide an invaluable resource for our members and others.

# Consortium for Advanced Simulation of Light Water Reactors

Nearly fifty years ago, the southern governors convened and advocated the creation of a regional agency to help ensure that the South had a dependable supply of affordable energy. Their dedication and hard work towards this task would come to fruition in the form of the Southern Interstate Nuclear Compact, the Nation's first such regional energy collective. As we move to the present, the Compact has a new name and a broader mandate. This new mission still meets the aims of the original charter but incorporates and fosters the use of technological innovation to address energy and environmental concerns.

The most recent project which displays



Above: Oak Ridge National Laboratory, Oak Ridge, TN, home of the Consortium for Advanced Simulation of Light Water Reactors (CASL). (Photo courtesy of Oak Ridge National Laboratory)

Below: Volunteers collect shipment information from truckers during 24-hour commodity flow survey along Interstate 20 on the Georgia / South Carolina horder



SSEB's continual focus on this area is the \$122 million award from the Department of Energy to create an energy innovation hub known as the Consortium for Advanced Simulation of Light Water Reactors (CASL) headquartered at Oak Ridge, Tennessee. This important project will prove instrumental in the development of the next generation of nuclear reactors.

The first task will be to develop computer models that simulate nuclear power plant operations, forming a "virtual reactor" for the predictive simulations of light water reactors. Other tasks include using computer models to reduce capital and operating costs per unit of energy, safely extending the lifetime of existing U.S. reactors and reducing nuclear waste volume generated by enabling higher fuel burn-ups.

In addition to the technical aspects of the program, the overall scope of the project includes five topical councils that integrate CASL work products and personnel with the broader scientific and engineering community. One of these areas, the Communications, Policy and Economic Development Council (CPEDC), will be chaired by Ken Nemeth, Executive Director of the Southern States Energy Board. The CPEDC will serve as the project lead for informing and educating stakeholders and decision-makers throughout the country regarding the achievements and opportunities created by CASL.

By participating in the CASL program, SSEB is addressing President Obama's call for a

"new era of energy exploration," while also adhering to the vision of those founding governors in "aiding and abetting the natural growth of nuclear energy as the talisman of the world of the future."

### RADIOACTIVE MATERIALS TRANSPORTATION

The Southern States Energy Board's Radioactive Materials Transportation Committee is committed to working with the Department of Energy to ensure shipments are safely transported through the region and states are adequately prepared in the event of an incident. The Committee, whose membership includes gubernatorially-appointed state emergency response planners, radiological health professionals and other state agency officials, has been engaged with the DOE's Office of Civilian Radioactive Waste Management (OCRWM) to address specific issues relevant to the development of the first federally designated repository for spent fuel and high-level radioactive waste, known as Yucca Mountain, located approximately 100 miles north of Las Vegas, Nevada.

However, the present administration has sought alternative strategies to citing Yucca Mountain as the final destination for the waste stream. Thus, in January 2010, Secretary Chu announced the formation of a Blue Ribbon Commission on America's Nuclear Future to provide recommendations for developing a safe, long-term solution to managing the Nation's used nuclear fuel and

Below: A volunteer collects shipment information from truckers during 24-hour commodity flow survey along Interstate 20 on the Georgia / South Carolina border.





on June 9, 2010.

nuclear waste. The Commission is made up of 15 members who have a range of expertise and experience in nuclear issues, including scientists, industry representatives, and respected former elected officials. It is expected to produce an interim report within 18 months and a final report within 24 months. SSEB's Radioactive Materials Transportation Committee stands ready as an available resource to the Commission to provide a southern states' perspective on policy related to nuclear power and transportation for the Nation's spent fuel and high-level radioactive waste.

Recent activities involving Committee members include collaboration with DOE's Environmental Management Office to conduct a commodity flow survey along the border of Georgia and South Carolina in June 2010. These surveys provided a 24 hour audit of the categories of materials moving along major transportation corridors in the region. Exercises such as this raise states' level of awareness and provide a sample of the effort that would be required to support a national transportation program.

#### TRANSURANIC WASTE **Transportation**

For over two decades SSEB's Transuranic (TRU) Waste Transportation Working Group has been assisting the Department of Energy (DOE) with environmental management clean-up activities. The TRU Working Group's major objective is to outline policies and procedures necessary to safely transport

shipments of TRU waste thru the southern region en route to the Waste Isolation Pilot Plant (WIPP) near Carlsbad, New Mexico. TRU waste, which is generated from the production of nuclear weapons, mainly consists of solid items such as protective clothing and gloves, rags, lab instruments and equipment, as well as other items that have become contaminated by transuranic isotopes. The gubernatorial appointees of the TRU Working Group represent a variety of disciplines including radiological health, emergency response and transportation planning. SSEB acts as liaison for the states to identify, prioritize and resolve regional issues related to the transportation of TRU waste. These activities are undertaken through a cooperative agreement with DOE's Carlsbad Field Office (CFO).

Savannah River Site (SRS), South Carolina, and Oak Ridge National Laboratory (ORNL), Tennessee, contain the majority of the South's TRU inventory but waste is also stored at several small quantity sites (SQS) in the northeastern part of the country. The location of these TRU waste sites makes our region a major transportation corridor for WIPP disposal, thus SSEB annually issues subgrants of over \$1.9 million to the states impacted by the routes of these shipments. The funding supports state salaries, emergency response preparedness activities, equipment purchases, public outreach programs, shipment tracking and other planning activities in each state.

Since opening in 1999, the WIPP facility



Above: Texas officials construct decontamination tent for hospital patients as a part of June 2010 WIPPTREY

Below: Workers in Austria supervise operation of moving a loaded cask to the floor for radiological sampling.



has processed over 8,600 shipments. SRS has made 1,110 of those shipments and is approaching 1.7 million miles of highway transport. Although ORNL only began making shipments in September 2008, it is approaching the century mark and has over 100,000 transport miles within the program. Commencement of the SOS shipments is expected to occur in June 2011. In order to prepare for the opening of the SQS corridor, SSEB will coordinate with the CFO to provide a policy and technology briefing for the states of West Virginia, Maryland, and Virginia, all of which will be impacted by this new route. Other activities that took place during the year included a WIPPTREX in Lindale, Texas. This exercise allowed the state and local emergency response agencies to demonstrate their preparedness to handle an accident involving a WIPP shipment.

## FOREIGN RESEARCH REACTOR SPENT NUCLEAR FUEL PROGRAM

The United States began providing foreign countries with nuclear technology during the "Atoms for Peace" program of the 1950's. The intent of this program was to encourage the nations to use the technology for peaceful research and medical uses and forgo development of nuclear weapons. In order to strengthen this non-proliferation policy, the U.S. assisted the foreign entities in converting their reactors to use low enriched uranium and also agreed to take back and manage the spent fuel. The Southern States Energy Board emerged as a partner

in this commitment in 1994 when DOE requested assistance in the planning efforts to transport two urgent-relief shipments of spent fuel from foreign countries to the Savannah River Site (SRS). After completion of these shipments, spent fuel under the auspices of this program would be sent to either SRS or the Idaho National Laboratory (INL), depending on the fuel type.

To achieve the goals of this program, SSEB formed two committees: the Foreign Research Reactor Spent Nuclear Fuel Transportation Working Group and the **Cross-Country Transportation Working** Group (CCTWG). The purpose of these committees is to provide state participation in the DOE planning effort to successfully carry out a 23-year shipping campaign (1996-2019) under which the U.S. would accept up to 19.2 metric tons of spent nuclear fuel from research reactors all over the world. This campaign could yield approximately 150-300 shipments entering the southern region via the Charleston Naval Weapons Station. Since their formation, these committees have assisted the transportation planning process by informing their state agencies and local officials about the program, coordinating with the shippers and state officials to develop a transportation plan and identifying first responder needs. Additionally, the CCTWG has the added task of providing DOE with a forum to develop a transportation plan for the safe and efficient shipping of this material from SRS

Below: Safety crew guides an International Standards Organization container onto a flat rack railcar at the Naval Weapons Station in Charleston, SC.





Above: The underbelly of a massive mobile crane used to offload containers from ocean vessels housing spent fuel casks and associated equipment at the Naval Weapons Station in

Charleston, SC.

Below: State and federal workers conduct radiological surveys of containers within the cargo hold of an ocean vessel.



to INL. SSEB membership in the CCTWG is comprised of the states of South Carolina, Georgia, Tennessee and Kentucky.

The overwhelming majority of these shipments enter the United States via the Charleston Naval Weapons Station at a rate of about two per year. As we enter the fourteenth year of the campaign, 42 shipments have arrived in the U.S. through our region. The most recent shipment was received at SRS in April 2010. This shipment hailed from Santiago, Chile and received moderate media coverage because of safety concerns in regard to the earthquake that occurred in the country, in addition to the overall emphasis on global threat reduction.

#### SOUTHERN EMERGENCY RESPONSE COUNCIL

Formed in 1972, the Southern Emergency Response Council (SERC) exists as a formalized emergency response agreement among the southern region to respond in case of a radiological incident. SERC representation is comprised of the 14 signatory states of the Southern Agreement for Mutual State Radiological Assistance including: Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, South Carolina, Tennessee, Texas and Virginia.

The Southern Agreement for Mutual State Radiological Assistance is implemented through the Southern Mutual Radiation Assistance Plan (SMRAP). Created as a blueprint for coordinating radiological emergency assistance capabilities among participating states in the southern region, SERC representatives review, revise and administer SMRAP on an annual basis to reflect changes in state emergency response capabilities and equipment. This document outlines the mutual aid agreement, the implementation process, emergency response contacts and available state resources.

An annual SERC meeting is held by SSEB to provide members with a forum to discuss matters related to SMRAP. Furthermore, SSEB operates as the regional coordinator for the testing of SMRAP activation procedures during joint power plant exercises between the states. The group convened September 23, 2009, in Baton Rouge, Louisiana, to ratify SMRAP for 2009. The states convened again in August 2010 in Portland, Oregon, to update SMRAP.

#### **CARBON MANAGEMENT:**

# THE SOUTHEAST REGIONAL CARBON SEQUESTRATION PARTNERSHIP (SECARB)

The Southeast Regional Carbon Sequestration Partnership (SECARB) is a program underway at the Southern States Energy Board to define the role for clean coal in a carbon constrained world and balance the environmental effects of existing and prospective power generating facilities. The



Above: Monitoring/Observation well located at the SECARB Phase III Detailed Area of Study in Cranfield, Mississippi.

Below: Dr. Jack Pashin, Geological Survey of Alabama (GSA), explains the pressure gauges and gas sampling lines at the 1-South monitoring well.





Above: Dr. Susan Hovorka addresses SECARB stakeholders in Atlanta, March 2010.

SECARB program represents a 13-state region, including Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia and portions of Kentucky and West Virginia. SECARB is comprised of over 100 participants representing federal and state governments, industry, academia, and non-profit organizations.

The primary goal of the SECARB Partnership is to develop the necessary framework and infrastructure to conduct field tests of carbon dioxide (CO<sub>2</sub>) sequestration and storage technologies and to evaluate potential opportunities for the future commercialization of carbon sequestration. The SECARB partners are accomplishing this goal in three phases. During Phase I (2003-2005), SECARB completed an initial screening of potential sources and terrestrial and geologic sinks for carbon sequestration and developed action plans for small-scale field demonstrations. SECARB's Phase II Validation program (2005-2010) is implementing the Phase I action plans and conducting three small-scale field tests in four locations. As of September 30, 2010, all Phase II field tests will be completed. The 10-year Phase III Development program began in 2007 with a goal to develop an integrated CO<sub>2</sub> capture, transportation and geologic storage project utilizing postcombustion CO2 captured from a coalfired power generating facility. Phase III includes two projects; the Early Test and the Anthropogenic Test (CO<sub>2</sub> from coal

combustion). The Phase III Early Test is underway, and the Anthropogenic Test will commence in the Spring of 2011.

SECARB continues to characterize the region's onshore and offshore geologic storage options; identify barriers and opportunities for the wide-scale construction of pipelines to transport CO<sub>2</sub> for sequestration, enhanced oil recovery, and other commercial uses; monitor federal and state regulatory and legislative activities; and support education and outreach efforts related to the program.

Significant accomplishments of SECARB's Early Test include the following:

- Became the first regional carbon sequestration project (RCSP) to begin CO2 injection;
- Became the first RCSP to monitor a 1 million tonne CO2 injection (Volume injected as of July 31, 2010 is 2.5 million tonnes); and
- SECARB is one of three international projects to be recognized at the Carbon Sequestration Leadership Forum meeting in Warsaw, Poland.

SECARB is one of seven regional partnerships nationwide. The Partnership receives approximately 61 percent of its funding from DOE's National Energy Technology Laboratory and the other 39 percent is provided by cost share partners.

Below: Virginia Congressman Rick Boucher powers on the drill during the SECARB Central Appalachian Coal Seam Project ground breaking ceremonu.





Above: CO2 injection operations at the SECARB Phase II Central Appalachian Coal Seam Project, January-February 2009.

Below: SSEB CO<sub>2</sub> Pipeline Study participants review infrastructure and liability issues in Lexington, KY in May 2010.



#### SOUTHEAST REGIONAL CO<sub>2</sub> SEQUESTRATION TRAINING PROGRAM (SECARB-ED)

Carbon capture and storage (CCS) technologies have tremendous potential for reducing CO<sub>2</sub> emissions and mitigating global climate change. These technologies encourage economic growth and have manageable influence on energy use. Deploying these technologies on a commercial scale will require expanding the workforce (including geologists, engineers, scientists, and technicians) trained in CCS specialties.

The U.S. Department of Energy's (DOE) National Energy Technology Laboratory (NETL) has selected seven projects to receive more than \$8.4 million in funding to help develop regional sequestration technology training centers in the United States. The majority of this funding is being provided by the American Recovery and Reinvestment Act (ARRA) of 2009.

NETL is partnering with the Southern States Energy Board (SSEB) and others, from both industry and academia, to develop the Southeast Regional CO<sub>2</sub> Sequestration Training Program (SECARB-Ed) for the southern United States. This will establish a CCS regional training program to facilitate national and global delivery of CCS technologies. The project will accomplish a series of tasks over a three-year period. Major project tasks include:

- Implementing a SECARB-Ed Sponsorship Development Program that allows SECARB-Ed to become selfsustaining after the initial three year period;
- Establishing a CCS technology curriculum by identifying topics for short courses;
- Training by providing speakers and assisting institutions in development and delivery of CCS training;
- Facilitating technology transfer through the use of electronic and printed media;

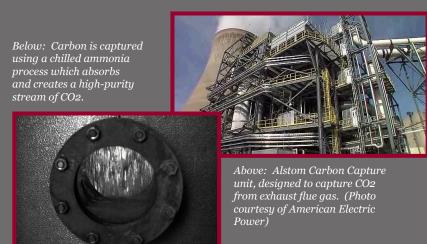
By addressing climate change and developing near-zero emission technologies that will significantly reduce CO<sub>2</sub> emissions from industrial plants, the project will advance the United States in its position as the leader in CCS technologies.

### CO2 PIPELINE AND OFFSHORE STUDIES

The CO2 Pipeline Study was established in 2009 to identify barriers and opportunities for the potential wide-scale construction of pipelines to transport carbon dioxide for sequestration, enhanced oil recovery, and other commercial uses. Other objectives are to inform key decision-makers about transportation as it relates to guidelines, legal, regulatory, and liability frameworks for Carbon Capture and Storage (CCS); to facilitate cooperation, collaboration, and communication among key stakeholders involved in pipeline infrastructure



Above: AEP's Mountaineer Power Plant, the world's first large scale carbon capture and storage project. (Photo courtesy of American Electric Power)



planning and development; and to form a basis for continued future planning and communication.

While the report will focus on regulatory and economic models that might emerge in the wide-scale adoption of CO2 transport, there also will be a wide range of background information on both CCS and pipeline basics.

In addition, the Pipeline Transportation Task Force will share research findings and recommendations with industry, operators, and the public to foster informed decisionmaking regarding pipeline construction and produce results that best meet local, state and national needs.

In a preliminary evaluation of the potential for offshore transport and storage of CO2, SSEB is conducting resource mapping and an initial assessment of storage capacity. This includes an evaluation of infrastructures to accommodate CO2 sequestration and the integration of data with NatCarb's ATLAS III.

The Interstate Oil and Gas Compact Commission is partnering with SSEB in these activities.

## CLEAN COAL AND ADVANCED COAL TECHNOLOGY

Southern States Energy Board's Committee on Clean Coal and Energy Technologies Collaboration continues to advance opportunities for applied research and development, investment, international cooperation and technology design for coal in the South, including coupling the development of clean coal technologies with potential economic development.

In May 2010, the Committee, along with the Eastern Coal Council, held a joint meeting to examine issues related to carbon management and coal use in the SSEB region. Highlighting the conference was a keynote address by Alpha Resources Board Chair, Michael J. Quillen, who discussed the current and future role of coal as a key energy resource in the United States. The importance of coal in job creation was also discussed at the conference.

Workforce issues continue to be a major component of the energy industry. Training and continuing education for miners is of significant concern, as nearly half of the coal miners in the Southeast face retirement within the next five years. The Kentucky Coal Academy, the West Virginia Coal Academy and teacher programs at Virginia Tech continue to contribute to the development of a secure labor force for the that industry.

Southern States Energy Board maintains a productive partnership with the Department of Energy's (DOE) Office of Coal and Power and the Office of Clean Coal and Energy Collaboration. International efforts, such as participation in the 23-nation Carbon Sequestration Leadership Forum, are coordinated with the Clean Fossil Fuel Systems Committee of the World Energy Council and the United States Energy

Right: Two fishing vessels drag an oil boom in the Gulf of Mexico after trapped oil is set ablaze May 6, 2010. The U.S. Coast Guard, federal agencies, BP and locals conducted an in-situ burning to aid in preventing the spread of oil in the wake of an explosion on mobile offshore drilling unit Deepwater Horizon, April 20, 2010. (U.S. Navy photo by Mass Communication Specialist 1st Class Jeffery Tilghman Williams)





Above: The drillship Discoverer Enterprise, right, and other vessels conduct flaring operations to mitigate the effects of the Deepwater Horizon oil spill June 25, 2010, in the Gulf of Mexico. (DoD photo by Petty Officer 3rd Class Jaclyn Young, U.S. Coast Guard)

Association (USEA). Similarly, SSEB participated in meetings of the Carbon Sequestration Leadership Forum (CSLF) in San Francisco and London, where policy and technology discussions are leading to international discussions of key energy ministers at the GHGT-10 Summit.

In April, SSEB participated in a workshop with the University of Texas at Arlington (UT- Arlington) and state and local elected officials in Arkansas concerning a new technology being developed by UT-Arlington researchers. This process would make it feasible to use significant lignite reserves in Arkansas for conversion to liquid fuels in a clean, economical manner. The previously passed Arkansas Lignite Resources Pilot Program sets the stage for lignite development through exploration, research and legal discussions in the state.

#### **AMERICAN ENERGY SECURITY**

In July 2006 the Southern States Energy Board released the American Energy Security Study. This nationally acclaimed work included the development of a comprehensive plan for the United States to establish energy security and independence through the production of alternative liquid transportation fuels from our vast and diverse domestic resource base, including coal, biomass and oil shale. The plan also emphasized significantly increasing domestic oil production and sequestering carbon using CO<sub>2</sub> Enhanced Oil Recovery (EOR) where carbon dioxide is injected underground into

mature and declining oil fields to mobilize stranded oil.

At its 2008 Annual Meeting, the Southern States Energy Board decided to follow up the initial study with research focusing on four areas: energy resources available in the U.S.; climate issues, including beneficial uses of CO<sub>2</sub> now and in the future; impacts on the electricity supply nationwide and implications of current energy issues on the transportation system within the Nation.

Since the advent of the study, significant events have reaffirmed the Board's urgency in such an undertaking. The U.S. continues to import more oil from unstable and unfriendly foreign nations. In July 2008, the price of oil reached \$144/barrel, which equates to over four dollars per gallon in this country. Although prices have since subsided and remained relatively stable, recent incidents, such as the Deepwater Horizon disaster in the Gulf of Mexico, exemplify the risks and potential volatility of future energy supply and price.

That said, a number of recommendations have emerged from the latter study.

With regards to domestic energy resources, the study suggested the following actions:

- Sponsor outreach and education programs to educate policymakers and the general public about energy resources and use;
- Develop mechanisms to mitigate fuel price volatility and risk including price

Since transportation accounts for approximately 28 percent of the use of energy resources in the U.S., improving vehicle efficiency and developing alternative fuels could play key roles in reducing demand, improving environmental impacts and increasing energy independence.





Investments in the electricity grid are critical to ensuring a reliable supply of power at low cost and in an environmentally sustainable manner while also connecting renewable power supplies with load centers.

floors for synthetic liquid fuels produced from domestic coal;

- Improve financial mechanisms to promote capital formation for energy infrastructure and resource development investments; and
- Promote rapid development of next generation renewable fuels through extension of the Production Tax Credit.

Carbon dioxide can be viewed as a commodity rather than a waste. Within that context, it can provide value within the energy supply chain through measures including:

- Incentives for the beneficial uses and storage of CO<sub>2</sub> enhanced oil and gas recovery;
- Incentives for research and development to create new markets for CO<sub>2</sub> such as industrial processes and other commercial applications;
- Support of a national CO<sub>2</sub> pipeline transport infrastructure through studies, funding mechanisms, federal and state oversight primacy and other regulatory matters; and
- Expanded research into enhanced oil recovery to develop next-generation technologies.

The electricity grid, including supply, transmission and operations, continues to be highly reliable, secure, stable and economical. Maintaining those attributes requires diligent efforts including:

- Modernizing energy infrastructure, including smart grid technologies and increased generator efficiencies;
- Providing regulations for equitable cost allocation for transmission resources;
- Expanding the use of nuclear energy through policies and regulations that reduce risks and exposure; and
- Increasing renewable sources of electricity and requisite transmission resources for remote, intermittent generation.

Relative to the transportation infrastructure, the study recommends consideration be given to:

- Improving and upgrading transportation infrastructure, including roads, bridges, aviation, rail and transit;
- Passing the Open Fuel Standard Act to increase overall fuel efficiency and alternatives;
- Promoting electric vehicles through further research, development and demonstration;
- Developing the SmartWay Transport Program to promote benefits of technologies, products, fuels and plans to reduce petroleum consumption.



Above: 1965 - Resistance of wood-plastic combination table top to fire is demonstrated on symbolic table presented to Governor Edward T. Breathitt, KY.

#### Below: Barbara Altizer, Eastern Coal Council, attends the 2009 SSEB Associate Members Meeting.



### BIOBASED PRODUCTS AND BIOENERGY DEVELOPMENT

The Southern States Biobased Alliance was established in 2000 as a program of the Southern States Energy Board, addressing the development of biomass for energy within the southern region. The Alliance's mission is to provide leadership and develop strategies that will foster a biobased industry and boost rural economies. Alliance membership is composed of both gubernatorial appointees from state legislatures representing SSEB member states, as well as representatives of the public or private sector who are active in energy, environment, agricultural and forestry issues. Key activities are focused on stimulating markets for biomass and learning about policies and incentives in other states.

SSEB is working with the Coalition of Northeast Governors (CONEG), the Midwestern Governors Association (MGA), the Western Governors' Association (WGA) and the Pacific Regional Biomass Partnership hosted by Washington State University under the auspices of the National Biomass Partnership (NBP). The NBP is a union of the five organizations and their long-standing regional biomass energy programs representing all fifty states, Puerto Rico, the U.S. Virgin Islands and the District of Columbia. All of these organizations are recognized nationally for their combined experience related to biomass technologies

and policies. The American Clean Energy and Security Act contains authorizing language to support the five regional host organizations that comprise the National Biomass Partnership.

This year's focus has been to facilitate partnerships among industry, government, academia and others to advance biomass technologies in the region and nationally. SSEB has contributed in many areas, from assessing the technical viability of technologies and evaluating business plans for power plant development to bringing interested parties together to explore joint ventures. Numerous activities include technical assistance and policy guidance to our member states and others in the region. Through this guidance, the Southern States Energy Board will continue to foster the growth and implementation of a bioeconomy in the South.

#### **PARTNERSHIPS**

Partnerships with government, business, industry, and academia enable the Southern States Energy Board to expand its reach and leverage opportunities to assist its member states. These collaborations allow the Board to increase its program and financial commitments to the benefit of the entire southern region. For example, SSEB's Southeast Regional Carbon Sequestration Partnership is a \$130 million effort with initial funding from the U.S. Department of Energy (DOE) but more than 39 percent of current project funding



Above (It to B): Howbout Wilsons

Above (L to R): Herbert Wheary, Dominion Resources and Dr. Michael Karmis, Virginia Tech, discuss technological advances at the March 2010 SECARB Stakeholders Briefing.

Below: Traci Rodosta, DOE; Rep. Myra Crownover, TX; Ken Nemeth, SSEB and Mike Smith, Interstate Oil and Gas Compact Commission, at the March 2010 SECARB Stakeholders Briefing. In the background, Dr. Jim Castle, Clemson University.





Above: Jim Kibler, AGL Resources, moderates the 2009 SSEB Associate Members Meeting.

is from industry partners. Another \$1 million coal and advanced power systems project is supplemented by a committee which includes state and industry officials. A radioactive materials management and transportation project is funded by DOE at \$2.4 million but is managed by a gubernatorially appointed committee of state officials who designate transport routes, train first responders, implement emergency response plans, operate special communications and tracking equipment, institute weather protocols for shipping and manage accident scenarios.

Founded in 1984 by SSEB's Chairman, Governor John Y. Brown of Kentucky, the Board's Associate Members represent the region's leading energy providers, resource companies, educational institutions and technology developers. They contribute invaluable expertise and advice regarding the breadth, development and direction of Board programs and projects as well as the social and economic aspects of state and federal legislation and its effects on the member states and territories. The Board works closely in partnership with its Associate Members to foster knowledge sharing, technology advancement and economic development in the South.

SSEB maintains several special partnerships that advance energy resource development and regulatory issues. A long-standing partnership with the Eastern Coal Council has produced opportunities for joint meetings and sponsorship of ECC's Annual Meeting. Collaboration with the Gasification

Technologies Council has generated annual conclaves for state economic and environmental regulators to study the advantages of emerging gasification plants throughout the country. SSEB is a sponsor of the North Carolina Energy Sustainability Conference and supports the activities of the Florida Bioenergy Council.

To foster regional cooperation, the Board continues a strong working relationship with the Southern Governor's Association and the Southern Growth Policies Board.

Through the U.S. Department of Energy's Office of Clean Energy Collaboration and the U.S. Energy Association, the Board became a founding stakeholder in the Carbon Sequestration Leadership Forum (CSLF) (24 nations) in 2003. These policy and technical meetings further international cooperation and understanding of carbon capture and storage, legal and regulatory issues, intellectual property, CO<sub>2</sub> for enhanced oil recovery and long term carbon storage. On September 8, 2010, the CSLF recognized SSEB's SECARB partnership as an international program of excellence (one of two projects to receive worldwide recognition).

SSEB is a founding member of the Global Carbon Capture and Storage Institute which was formed in 2009 to educate policymakers and stakeholders on CCS issues. Other intercontinental activities include cooperation with the International Energy Agency and the World Energy Council. Coordination with the National Energy Technology Laboratory and the United Arab



Above: Sharon Tucker, Denbury Resources, Inc. presents information on the Midwest CO<sub>2</sub> Pipeline at the 2009 SSEB Associate Members Meeting.

Below (L to R): Sen. David Myers, OK, and Rep. Harry Geisinger, GA, at the SSEB 2009 Legislative Briefing.





Above: Dr. Leonard Peters, Secretary of the KY Energy and Environment Cabinet, addresses members during the SSEB 2009 Annual Meeting.

Below (L to R): Sen. Jimmy Jeffress, AR, and Gregory Pauley, American Electric Power, consult during the SSEB 2009 Legislative Briefing.



Emirates led to a meeting in June to discuss the UAE's interests in using carbon dioxide for enhanced oil recovery. A follow up meeting with SSEB as host will be scheduled later in the year.

#### **EDUCATING STAKEHOLDERS**

Southern States Energy Board takes seriously its mission of outreach and education through a variety of events, conferences, workshops, panel discussions, exhibits and keynote presentations. Over the past year SSEB presented at and participated in a wide range of activities ranging from a citizen meeting to discuss a proposed new electrical generating plant in Surry County, Virginia to community discussions of residential energy efficiency applications in DeKalb County, Georgia to key energy conversations with the Council of State Governments and the Southern Legislative Conference. Other significant engagements from the past year are listed below:

- West Virginia Coal Association
   West Virginia and America's Energy
   Securitu:
- Mississippi Energy Coordinators
   Mississippi and the Energy Future of the
   South and the Nation;
- Oklahoma Clean Energy Independence Commission
   Oklahoma and the Nation's Energy Future;
- State of Arkansas
   Legislators Workshop on Lignite;

- West Virginia Carbon Capture and Storage Working Group CCS Technology and West Virginia Coal;
- Puerto Rico
  Renewable Energy Panel: International
  Trends/Perspectives;
- Virgin Islands Energy Office and the Island Chamber of Commerce Renewable Energy Strategies;
- Southeastern Middle School Science Teachers, Atlanta, Georgia Climate Change and Mitigation Techniques including CCS;
- Greenprints Conference Energy and Reducing Carbon Emissions in Electricity Generation; and
- Renewable Energy Conference, North Carolina
   Information Exchange on Renewables.

SSEB actively works with public utility commissioners in the SSEB region, as well as nationally. The Bonbright Conference, an annual event held in conjunction with the University of Georgia, brings together commissioners from the Southeast to hear a variety of presentations, including the SSEB update on Carbon Capture and Storage and how it could impact regulatory decisionmaking in southern states. SSEB also cooperates with the utility commissioners in the Eastern Interconnection Planning Collaboration, working through a public stakeholder group to develop a robust process for studies of the electric transmission system in the East.





Above: Jeanelle McCain, Progress Energy, participates in the SSEB 2009 Associate Members Meeting.

Below (L to R): Governor Joe Manchin III, WV, and Richard Esposito, Southern Company, at the March 2010 SECARB Stakeholders Briefing.





Above (L to R): Robert Wright, DOE, and David Alaniz, S&ME, Inc., observe a presentation during the SSEB 2009 Associate Members Meeting.

### THE BOARD THANKS ITS ASSOCIATE MEMBERS:

- AGL Resources
- Alpha Natural Resources
- American Coalition for Clean Coal Electricity
- American Electric Power
- Arch Coal, Incorporated
- Bell Bio-Energy, Incorporated
- Big Rivers Electric Corporation
- ChevronTexaco Corporation
- Dominion
- Duke Energy Carolinas, LLC
- Eastern Coal Council
- Edison Electric Institute
- Entergy Services
- KeLa Energy, LLC
- Kentucky Coal Academy
- Marshall Miller & Associates, Incorporated
- National Coal Council
- National Mining Association
- Nuclear Energy Institute
- NRG Energy, Incorporated
- Peabody Energy
- Progress Energy
- Range Fuels, Incorporated
- Ruff & Tuff Electric Vehicles

- S&ME, Incorporated
- Santee Cooper
- SCANA Corporation
- Shell Oil Company
- Southern Company
- Sterling Planet, Incorporated
- TECO Services, Incorporated
- TXU Energy
- Tennessee Valley Authority

#### Sources of Support

The Southern States Energy Board's core funding comes from annual appropriations from the 18 member states and territories. Each member's share is computed by a formula written into the original Compact. This formula is comprised of an equal share, per capita income and population. The Board has not requested an increase in annual appropriations in more than 20 years. The Compact authorizes the Board to accept funds from any state, federal agency, interstate agency, institution, person, firm or corporation provided those funds are used for the Board's purposes and functions.

This year, additional support was received for special projects from research grants, cooperative agreements and contracts from the U.S. Department of Energy (including awards funded through the National Energy Technology Laboratory). Also, the Board received

Below: Sen. Robert Adley, LA, updates the group on Louisiana legislation at the SSEB 2009 Legislative Briefing.





Above: Rep. Allen Maxwell,
AR, takes in a presentation
during the SSEB 2009 Annual
Meetina.



Right: Sen. John Watkins, VA, addresses the SSEB 2009 Annual Meeting.





funding from DOE in November 2009 through the American Recovery & Reinvestment Act of 2009 (ARRA).

Additionally, the SSEB Carbon Management Program/Southeast Regional Carbon Sequestration Partnership's Industry Associates provide an annual monetary contribution to support the SECARB Program. Public Partners may join for a lesser amount per non-profit organization, university or national laboratory. Allocation of these contributions is at the discretion of the Southern States Energy Board to support the program. Industry Associates are provided with regular updates of events and progress, and participate in an annual stakeholder meeting held in Atlanta, Georgia. For a current list of industry associates, as well as all team members, please visit www. secarbon.org.

In addition, SSEB continues to lead an Associate Members Program comprised of industry partners who provide an annual contribution to the Board. Membership includes organizations from the nongovernmental sector, corporations, trade associations and public advocacy groups.

#### STATE APPROPRIATIONS

\$32,572
\$31,027
\$47,212
\$35,782
\$32,197
\$33,817
\$37,192
\$29,077
\$36,247
\$37,042
\$32,512
\$25,597
\$31,372
\$34,267
\$55,402
\$25,297
\$38,362
\$28,732





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**GEORGIA** 

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**TENNESSEE** 

**TEXAS** 

**U.S. VIRGIN ISLANDS** 

**VIRGINIA** 

**WEST VIRGINIA** 



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